

# THE ASTROPHYSICAL JOURNAL

## INDEX TO VOLUME 355, PARTS 1 AND 2

1990 MAY 20 AND JUNE 1

- ABBOTT, D. C. Non-LTE Model Calculations for SN 1987A and the Extragalactic Distance Scale. *W. Schmutz, D. C. Abbott, R. S. Russell, W.-R. Hamann, and U. Wessolowski.* 355, 255, 90-A12 (1990)
- AGRINIER, B. Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne.* 355, 645, 96-E10 (1990)
- ALLAMANDOLA, L. J. The Physical and Infrared Spectral Properties of CO<sub>2</sub> in Astrophysical Ice Analogs. *S. A. Sandford and L. J. Allamandola.* 355, 357, 91-C9 (1990)
- ALLEN, M. M. Interstellar Absorption along the Line of Sight to  $\sigma$  Scorpii Using Copernicus Observations. *M. M. Allen, T. P. Snow, and E. B. Jenkins.* 355, 130, 88-E9 (1990)
- ANDERSON, MARTHA. Flow Patterns in Radio Hot Spots: A Study of 3C 33 North. *Lawrence Rudnick and Martha Anderson.* 355, 427, 93-F7 (1990)
- ANTIOCHOS, S. K. The Effect of Nonequilibrium Ionization on Ultraviolet Line Shifts in the Solar Transition Region. *D. Spadaro, G. Noci, R. A. Zappalà, and S. K. Antiochos.* 355, 342, 91-B5 (1990)
- ANTONUCCI, E. High-Velocity Evaporation during the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Dodero, and R. Martin.* 355, 374, 91-D14 (1990)
- Velocity-Temperature Distribution in the Evaporating Plasma during the Impulsive Phase of Solar Flares (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Dodero, and R. Martin.* 355, 375, 91-E1 (1990)
- AVRETT, E. H. Energy Balance in the Solar Transition Region. I. Hydrostatic Thermal Models with Ambipolar Diffusion. *J. M. Fontenla, E. H. Avrett, and R. Loeser.* 355, 700, 97-C4 (1990)
- BAAN, WILLEM A. Periodic Variations of the Extragalactic H<sub>2</sub>O Maser in NGC 4258. *Aubrey D. Haschick and Willem A. Baan.* 355, L23, 92-C6 (1990)
- BALBUS, STEVEN A. Radiative Magnetized Thermal Conduction Fronts. *Kazimierz J. Borkowski, Steven A. Balbus, and Carl C. Frisstrom.* 355, 501, 94-F7 (1990)
- BALCELLS, M. The Kinematics and Morphology of NGC 520. *S. A. Stanford and M. Balcells.* 355, 59, 87-F10 (1990)
- BARKAT, ZALMAN. The Convective Urca Mechanism. *Zalman Barkat and J. Craig Wheeler.* 355, 602, 96-A12 (1990)
- BAR-NUN, AKIVA. Heating and Melting of Small Ice Satellites by the Decay of <sup>26</sup>Al. *Dina Prialnik and Akiva Bar-Nun.* 355, 281, 90-D1 (1990)
- BASTIEN, PIERRE. Collapse and Fragmentation of Isothermal and Polytrropic Cylindrical Clouds. *François Rouleau and Pierre Bastien.* 355, 172, 89-B1 (1990)
- BACHELOR, DAVID. Observational Clues to the Energy Release Process in Impulsive Solar Bursts (Abstract of Paper in 1990 June Suppl.). *David Batchelor.* 355, 374, 91-D14 (1990)
- BAZELL, D. CO and IRAS Detection of an Intermediate-Velocity Cloud. *F.-X. Désert, D. Bazell, and L. Blitz.* 355, L51, 98-D1 (1990)
- BECKMAN, J. E. Mg II Observed in the Local Interstellar Medium: The Local Cloud. *R. Génova, P. Molaro, G. Vladilo, and J. E. Beckman.* 355, 150, 88-G2 (1990)
- BEER, H. <sup>88</sup>Sr and <sup>89</sup>Y: The s-Process at Magic Neutron Number *N* = 50. *F. Käppeler, W. R. Zhao, H. Beer, and U. Ratzel.* 355, 348, 91-B12 (1990)
- BENSADOUN, M. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Witebsky.* 355, 102, 88-C6 (1990)
- BLAND, JONATHAN. Imaging Spectrophotometry of Ionized Gas in NGC 1068. I. Kinematics of the Narrow-Line Region. *Gerald Cecil, Jonathan Bland, and R. Brent Tully.* 355, 70, 87-G10 (1990)
- BLITZ, L. CO and IRAS Detection of an Intermediate-Velocity Cloud. *F.-X. Désert, D. Bazell, and L. Blitz.* 355, L51, 98-D1 (1990)
- BODENHEIMER, PETER. The Formation Phase of the Solar Nebula. *Peter Bodenheimer, Harold W. Yorke, Michał Różycka, and Joel E. Tohline.* 355, 651, 96-F4 (1990)
- BOND, HOWARD E. Morphologies of Planetary Nebulae Ejected by Close-Binary Nuclei. *Howard E. Bond and Mario Livio.* 355, 568, 95-E1 (1990)
- BORKOWSKI, KAZIMIERZ J. Radiative Magnetized Thermal Conduction Fronts. *Kazimierz J. Borkowski, Steven A. Balbus, and Carl C. Frisstrom.* 355, 501, 94-F7 (1990)
- BOROSON, TODD A. Spectroscopy of Extended Red Emission in Reflection Nebulae. *Adolf N. Witt and Todd A. Boroson.* 355, 182, 89-B12 (1990)
- BOWYER, STUART. A Redshift Survey toward a Proposed Void of Galaxies Suggested by the Distribution of Abell Clusters. *Jeffrey A. Willick, Jean P. Brodie, and Stuart Bowyer.* 355, 393, 93-C8 (1990)
- BRODIE, JEAN P. A Redshift Survey toward a Proposed Void of Galaxies Suggested by the Distribution of Abell Clusters. *Jeffrey A. Willick, Jean P. Brodie, and Stuart Bowyer.* 355, 393, 93-C8 (1990)
- BROWN, J. C. On Removal of the Gradual Component in Analyses of Solar Impulsive Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa, J. C. Brown, E. Correia, and P. Kaufmann.* 355, 377, 91-E3 (1990)
- Beam Heating in Solar Flares: Electrons or Protons? (Abstract of Paper in 1990 June Suppl.). *J. C. Brown, M. Karlicky, A. L. MacKinnon, and G. H. J. van den Oord.* 355, 386, 91-E12 (1990)
- BUCHLER, J. ROBERT. Resonances and Period Doubling in the Pulsations of Stellar Models. *Pawel Moskalik and J. Robert Buchler.* 355, 590, 95-G12 (1990)
- BUCKLEY, D. A. H. LB 1800: A Bright Eclipsing Cataclysmic Variable and a Transient X-Ray Source. *D. A. H. Buckley, D. J. Sullivan, R. A. Remillard, I. R. Tuohy, and M. Clark.* 355, 617, 96-C1 (1990)
- BURTON, MICHAEL G. Shocked [O I] 63 Micron Line Emission from the Supernova Remnant IC 443. *Michael G. Burton, D. J. Hollenbach, M. R. Haas, and E. F. Erickson.* 355, 197, 89-D1 (1990)
- CALLY, P. S. Turbulent Thermal Conduction in the Solar Transition Region. *P. S. Cally.* 355, 693, 97-B10 (1990)
- CALVANI, MASSIMO. Implications of Arp 102B: Line Emission from an Accretion Disk? *Jack W. Sulentic, Massimo Calvani, Paolo Marziani, and Wei Zheng.* 355, L15, 92-B11 (1990)
- CANE, H. V. The Relationship between Energetic Particles and Flare Properties for Impulsive Solar Flares (Abstract of Paper in 1990 June Suppl.). *H. V. Cane and D. V. Reames.* 355, 379, 91-E5 (1990)
- CASEY, SEAN. Submillimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10. *Harley A. Thronson, Jr., Deidre A. Hunter, Sean Casey, and D. A. Harper.* 355, 94, 88-B9 (1990)
- CECIL, GERALD. Imaging Spectrophotometry of Ionized Gas in NGC 1068. I. Kinematics of the Narrow-Line Region. *Gerald Cecil, Jonathan Bland, and R. Brent Tully.* 355, 70, 87-G10 (1990)
- CHAMBE, G. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres,*

- N. Feautrier, M. Rovira, and S. Sahal-Bréchet. 355, 383, 91-E9 (1990)
- CHENG, EDWARD S. A Large-Scale Cosmic Microwave Background Anisotropy Measurement at Millimeter and Submillimeter Wavelengths. *Lyman A. Page, Edward S. Cheng, and Stephan S. Meyer*. 355, L1, 92-A7 (1990)
- CHIKADA, Y. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- CHOUHURI, ARNAB RAI. On the Possibility of an  $\alpha^2\omega$ -Type Dynamo in a Thin Layer inside the Sun. *Arnab Rai Choudhuri*. 355, 733, 97-F5 (1990)
- CHUPP, EDWARD L. Emission Characteristics of Three Intense Solar Flares Observed in Cycle 21 (Abstract of Paper in 1990 June Suppl.). *Edward L. Chupp*. 355, 378, 91-E4 (1990)
- CLARK, M. LB 1800: A Bright Eclipsing Cataclysmic Variable and a Transient X-Ray Source. *D. A. H. Buckley, D. J. Sullivan, R. A. Remillard, I. R. Tuohy, and M. Clark*. 355, 617, 96-C1 (1990)
- COOK, J. W. Relationship of Magnetic Field Strength and Brightness of Fine-Structure Elements in the Solar Temperature Minimum Region. *J. W. Cook and J. A. Ewing*. 355, 719, 97-D11 (1990)
- CORNETT, ROBERT H. Vacuum Ultraviolet Images of the Large Magellanic Cloud: Erratum. *Andrew M. Smith, Robert H. Cornett, and Robert S. Hill*. 355, 746, 97-G6 (1990) (Orig. paper in 320, 609, 116-C9 (1987))
- CORREIA, E. Rise Times in Solar Radio Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa and E. Correia*. 355, 377, 91-E3 (1990)
- On Removal of the Gradual Component in Analyses of Solar Impulsive Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa, J. C. Brown, E. Correia, and P. Kaufmann*. 355, 377, 91-E3 (1990)
- COSTA, E. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Agnirier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- COSTA, J. E. R. Rise Times in Solar Radio Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa and E. Correia*. 355, 377, 91-E3 (1990)
- On Removal of the Gradual Component in Analyses of Solar Impulsive Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa, J. C. Brown, E. Correia, and P. Kaufmann*. 355, 377, 91-E3 (1990)
- COWLEY, A. P. The Low-Mass X-Ray Binary LMC X-2. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidke, and I. B. Thompson*. 355, 496, 94-F1 (1990)
- CRABTREE, DENNIS R. Late-Type Stars in an Inner and Far Disk Field of M31. *Harvey B. Richer, Dennis R. Crabtree, and Christopher J. Pritchett*. 355, 448, 94-A5 (1990)
- CRAMPTON, DAVID. The Low-Mass X-Ray Binary LMC X-2. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidke, and I. B. Thompson*. 355, 496, 94-F1 (1990)
- DAL FUME, D. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- DALY, R. A. A Model to Explain the Correlation between the Optical and Radio Properties of High-Redshift Galaxies. *R. A. Daly*. 355, 416, 93-E8 (1990)
- DE AMICI, G. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Witebsky*. 355, 102, 88-C6 (1990)
- DE BERGH, C. Monodeuterated Methane in the Outer Solar System. IV. Its Detection and Abundance on Neptune. *C. de Bergh, B. L. Lutz, T. Owen, and J.-P. Maillard*. 355, 661, 96-G1 (1990)
- DEBRUNNER, H. Proton Energy Spectra at the Sun in the Solar Cosmic-Ray Events on 1978 May 7 and 1984 February 16. *J. A. Lockwood, H. Debrunner, E. O. Flückiger, and H. Grädel*. 355, 287, 90-D8 (1990)
- Signature of the Solar Cosmic-Ray Event on 1982 June 3 (Abstract of Paper in 1990 June Suppl.). *H. Debrunner, E. O. Flückiger, and J. A. Lockwood*. 355, 379, 91-E5 (1990)
- Were Solar Neutrons Observed by Neutron Monitors on 1984 April 25? (Abstract of Paper in 1990 June Suppl.). *D. F. Smart, M. A. Shea, E. O. Flückiger, H. Debrunner, and J. E. Humble*. 355, 380, 91-E6 (1990)
- DÉSERT, F.-X. CO and IRAS Detection of an Intermediate-Velocity Cloud. *F.-X. Désert, D. Bazell, and L. Blitz*. 355, L51, 98-D1 (1990)
- DEWDNEY, P. E. The Halo and Magnetic Field of the Coma Cluster of Galaxies. *K.-T. Kim, P. P. Kronberg, P. E. Dewdney, and T. L. Landecker*. 355, 29, 87-D1 (1990)
- DICKMAN, ROBERT L. Analysis of  $^{12}\text{CO}$  and  $^{13}\text{CO}$  Emission in a 3 Square Degree Region of the Galactic Plane between  $l = 23^\circ$  and  $25^\circ$ . *Youngung Lee, Ronald L. Snell, and Robert L. Dickman*. 355, 536, 95-B4 (1990)
- DODERO, M. A. High-Velocity Evaporation during the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Doderio, and R. Martin*. 355, 374, 91-D14 (1990)
- Velocity-Temperature Distribution in the Evaporating Plasma during the Impulsive Phase of Solar Flares (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Doderio, and R. Martin*. 355, 375, 91-E1 (1990)
- DOI, M. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- DOSCHEK, G. A. Soft X-Ray Spectroscopy of Solar Flares: An Overview (Abstract of Paper in 1990 June Suppl.). *G. A. Doschek*. 355, 374, 91-D14 (1990)
- DRÖGE, WOLFGANG. A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- DUNCAN, MARTIN. Planetary Perturbations and the Origin of Short-Period Comets. *Thomas Quinn, Scott Tremaine, and Martin Duncan*. 355, 667, 96-G9 (1990)
- DUSI, W. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- EFIMOV, YU. E. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- ELMEGREEN, BRUCE G. Optical Tracers of Spiral Wave Resonances in Galaxies: Applications to NGC 1566. *Bruce G. Elmegreen and Debra Meloy Elmegreen*. 355, 52, 87-F1 (1990)
- ELMEGREEN, DEBRA MELOY. Optical Tracers of Spiral Wave Resonances in Galaxies: Applications to NGC 1566. *Bruce G. Elmegreen and Debra Meloy Elmegreen*. 355, 52, 87-F1 (1990)
- ENOME, S. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- ERICKSON, E. F. Shocked [O I] 63 Micron Line Emission from the Supernova Remnant IC 443. *Michael G. Burton, D. J. Hollenbach, M. R. Haas, and E. F. Erickson*. 355, 197, 89-D1 (1990)
- EVANS, NEAL J., II. An  $\text{NH}_3$  Ring around the Infrared Sources in NGC 2071. *Shudong Zhou, Neal J. Evans II, and Lee G. Mundy*. 355, 159, 88-G12 (1990)
- EVENSON, PAUL. Solar Neutron Decay Proton Observations in Cycle 21 (Abstract of Paper in 1990 June Suppl.). *Paul Evenson, Richard Kroeger, Peter Meyer, and Donald Reames*. 355, 381, 91-E7 (1990)
- A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld,*

- Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses. 355, 381, 91-E7 (1990)
- EWING, J. A. Relationship of Magnetic Field Strength and Brightness of Fine-Structure Elements in the Solar Temperature Minimum Region. *J. W. Cook and J. A. Ewing*. 355, 719, 97-D11 (1990)
- FABBIANO, G. Nuclear Outflow from the Edge-on Galaxy NGC 3628. *G. Fabbiano, T. Heckman, and W. C. Keel*. 355, 442, 93-G11 (1990)
- FEAUTRIER, N. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet*. 355, 383, 91-E9 (1990)
- FLÜCKIGER, E. O. Proton Energy Spectra at the Sun in the Solar Cosmic-Ray Events on 1978 May 7 and 1984 February 16. *J. A. Lockwood, H. Debrunner, E. O. Flückiger, and H. Grädel*. 355, 287, 90-D8 (1990)
- Signature of the Solar Cosmic-Ray Event on 1982 June 3 (Abstract of Paper in 1990 June Suppl.). *H. Debrunner, E. O. Flückiger, and J. A. Lockwood*. 355, 379, 91-E5 (1990)
- Were Solar Neutrons Observed by Neutron Monitors on 1984 April 25? (Abstract of Paper in 1990 June Suppl.). *D. F. Smart, M. A. Shea, E. O. Flückiger, H. Debrunner, and J. E. Humble*. 355, 380, 91-E6 (1990)
- FONTENLA, J. M. Energy Balance in the Solar Transition Region. I. Hydrostatic Thermal Models with Ambipolar Diffusion. *J. M. Fontenla, E. H. Avrett, and R. Loesser*. 355, 700, 97-C4 (1990)
- FORVEILLE, T. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, L27, 92-C11 (1990)
- FREEDMAN, WENDY L. Local Calibrators for the Infrared Tully-Fisher Relation. *Wendy L. Freedman*. 355, L35, 98-B6 (1990)
- FRIBERG, P. Interstellar Cyanomethane. *B. E. Turner, P. Friberg, W. M. Irvine, S. Saito, and S. Yamamoto*. 355, 546, 95-C4 (1990)
- FRISTROM, CARL C. Radiative Magnetized Thermal Conduction Fronts. *Kazimierz J. Borkowski, Steven A. Balbus, and Carl C. Fristrom*. 355, 501, 94-F7 (1990)
- FRONTERA, F. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- GARY, DALE E. Microwave Structure of the Quiet Sun at 8.5 GHz. *Dale E. Gary, Harold Zirin, and Haimin Wang*. 355, 321, 90-G6 (1990)
- GÉNOVA, R. Mg II Observed in the Local Interstellar Medium: The Local Cloud. *R. Génova, P. Molero, G. Vladilo, and J. E. Beckman*. 355, 150, 88-G2 (1990)
- GERARDI, G. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- GIBBS, KENNETH. A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- GLACCUM, W. J. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, L27, 92-C11 (1990)
- GOLDSMITH, P. F. Polarization of the  $\lambda = 1.3$  Millimeter Continuum Radiation from the Kleinmann-Low Nebula. *G. Novak, C. R. Predmore, and P. F. Goldsmith*. 355, 166, 89-A7 (1990)
- GOODRICH, R. W. Spectropolarimetry of High-Polarization Seyfert 2 Galaxies and Unified Seyfert Theories. *J. S. Miller and R. W. Goodrich*. 355, 456, 94-B1 (1990)
- GOODRICH, ROBERT W. Pa $\beta$  Measurements and Reddening in Seyfert 1.8 and 1.9 Galaxies. *Robert W. Goodrich*. 355, 88, 88-B1 (1990)
- GRABELSKY, D. A. Search for Cold Gas in Clusters with and without Cooling Flows. *D. A. Grabelsky and M. P. Ulmer*. 355, 401, 93-D4 (1990)
- GRÄDEL, H. Proton Energy Spectra at the Sun in the Solar Cosmic-Ray Events on 1978 May 7 and 1984 February 16. *J. A. Lockwood, H. Debrunner, E. O. Flückiger, and H. Grädel*. 355, 287, 90-D8 (1990)
- GRUNSFELD, JOHN M. A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- GUGLENKO, V. G. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- HAAS, M. R. Shocked [O I] 63 Micron Line Emission from the Supernova Remnant IC 443. *Michael G. Burton, D. J. Hollenbach, M. R. Haas, and E. F. Erickson*. 355, 197, 89-D1 (1990)
- HAGYARD, M. J. Nonpotential Magnetic Fields at Sites of Gamma-Ray Flares (Abstract of Paper in 1990 June Suppl.). *M. J. Hagyard, P. Venkatakrishnan, and J. B. Smith, Jr.* 355, 376, 91-E2 (1990)
- HAMANN, W.-R. Non-LTE Model Calculations for SN 1987A and the Extragalactic Distance Scale. *W. Schmutz, D. C. Abbott, R. S. Russell, W.-R. Hamann, and U. Wessolowski*. 355, 255, 90-A12 (1990)
- HANAWA, TOMOYUKI. An Interpretation of X-Ray Spectra of Type II Bursts from the "Rapid Burster": Comptonization Due to Accretion Flow. *Kouichi Hirokuni, Tomoyuki Hanawa, and Nobuyuki Kawai*. 355, 577, 95-F11 (1990)
- A Model for the High-Energy Power-Law Component Observed in the X-Ray Spectra of Low-Mass X-Ray Binaries. *Tomoyuki Hanawa*. 355, 585, 95-G6 (1990)
- HARPAZ, AMOS. Stability of a Collapsed Star in Bimetric General Relativity. *Amos Harpaz and Nathan Rosen*. 355, 210, 89-E1 (1990)
- HARPER, D. A. Submillimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10. *Harley A. Thronson, Jr., Deidre A. Hunter, Sean Casey, and D. A. Harper*. 355, 94, 88-B9 (1990)
- HARRIS, WILLIAM E. A Globular Cluster System Surrounding the cD Galaxy NGC 6166. *C. J. Prichet and William E. Harris*. 355, 410, 93-E1 (1990)
- HARTWICK, F. D. A Search for Primeval Galaxies at  $z = 1.9$ . *C. J. Prichet and F. D. A. Hartwick*. 355, L11, 92-B7 (1990)
- HARVEY, P. M. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, L27, 92-C11 (1990)
- HASCHICK, AUBREY D. Periodic Variations of the Extragalactic H<sub>2</sub>O Maser in NGC 4258. *Aubrey D. Haschick and Willem A. Baan*. 355, L23, 92-C6 (1990)
- HECKMAN, T. Nuclear Outflow from the Edge-on Galaxy NGC 3628. *G. Fabbiano, T. Heckman, and W. C. Keel*. 355, 442, 93-G11 (1990)
- HÉNOUX, J. C. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet*. 355, 383, 91-E9 (1990)
- HIGDON, J. C. Apparent Spatial Uniformity of the Gamma-Ray Bursts Detected by the Konus Experiment on Venera 11 and Venera 12. *J. C. Higdon and Maarten Schmidt*. 355, 13, 87-B11 (1990)
- HILL, ROBERT S. Vacuum Ultraviolet Images of the Large Magellanic Cloud: Erratum. *Andrew M. Smith, Robert H. Cornett, and Robert S. Hill*. 355, 746, 97-G6 (1990) (Orig. paper in 320, 609, 116-C9 (1987))
- HIROKUNI, KOUICHI. An Interpretation of X-Ray Spectra of Type II Bursts from the "Rapid Burster": Comptonization Due to Accretion Flow. *Kouichi Hirokuni, Tomoyuki Hanawa, and Nobuyuki Kawai*. 355, 577, 95-F11 (1990)
- HO, PAUL T. P. VLA Imaging of Extragalactic Ammonia: Hot Gas in the Nucleus of IC 342. *Paul T. P. Ho, Robert N. Martin, Jean L. Turner, and James M. Jackson*. 355, L19, 92-C1 (1990)



- HOBBS, L. M. On Lithium Removal from G Dwarfs: Erratum. *L. M. Hobbs, Icko Iben, Jr., and Catherine Pilachowski*. 355, 745, 97-G5 (1990) (Orig. paper in 347, 817, 193-E1 (1989))
- HOLLENBACH, D. J. Shocked [O I] 63 Micron Line Emission from the Supernova Remnant IC 443. *Michael G. Burton, D. J. Hollenbach, M. R. Haas, and E. F. Erickson*. 355, 197, 89-D1 (1990)
- HOLZER, THOMAS E. Lower Solar Chromosphere-Corona Transition Region. I. Theoretical Models with Small Temperature Gradients. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 295, 90-E4 (1990)
- Lower Solar Chromosphere-Corona Transition Region. III. Implications of the Observed Quiet-Sun Emission Measure Including Wave Pressure Effects. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 309, 90-F6 (1990)
- HUA, X.-M. Ion and Relativistic Electron Transport in Solar Flares (Abstract of Paper in 1990 June Suppl.). *R. Ramaty, J. A. Miller, X.-M. Hua, and R. E. Lingenfelter*. 355, 377, 91-E3 (1990)
- HUMBLE, J. E. Were Solar Neutrons Observed by Neutron Monitors on 1984 April 25? (Abstract of Paper in 1990 June Suppl.). *D. F. Smart, M. A. Shea, E. O. Flückiger, H. Debrunner, and J. E. Humble*. 355, 380, 91-E6 (1990)
- HUNTER, DEIDRE A. Submillimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10. *Harley A. Thronson, Jr., Deidre A. Hunter, Sean Casey, and D. A. Harper*. 355, 94, 88-B9 (1990)
- HUTCHINGS, J. B. The Low-Mass X-Ray Binary LMC X-2. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, and I. B. Thompson*. 355, 496, 94-F1 (1990)
- IBEN, ICKO, JR. On Lithium Removal from G Dwarfs: Erratum. *L. M. Hobbs, Icko Iben, Jr., and Catherine Pilachowski*. 355, 745, 97-G5 (1990) (Orig. paper in 347, 817, 193-E1 (1989))
- IMAMURA, JAMES N. On the Stability Properties of White Dwarf Radiative Shocks: Settling Solutions. *James N. Imamura and Michael T. Wolff*. 355, 216, 89-E9 (1990)
- IPSER, JAMES R. The Oscillations of Rapidly Rotating Newtonian Stellar Models. *James R. Ipser and Lee Lindblom*. 355, 226, 89-F7 (1990)
- IRVINE, W. M. Interstellar Cyanomethane. *B. E. Turner, P. Friberg, W. M. Irvine, S. Saito, and S. Yamamoto*. 355, 546, 95-C4 (1990)
- ISHIGURO, M. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- ISHIGURO, MASATO. New H<sub>2</sub>O Masers in the NGC 7538 Region. *Osamu Kameya, Koh-Ichiro Morita, Ryohei Kawabe, and Masato Ishiguro*. 355, 562, 95-D7 (1990)
- ISHIZUKI, S. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- JACKSON, JAMES M. VLA Imaging of Extragalactic Ammonia: Hot Gas in the Nucleus of IC 342. *Paul T. P. Ho, Robert N. Martin, Jean L. Turner, and James M. Jackson*. 355, L19, 92-C1 (1990)
- JENKINS, E. B. Interstellar Absorption along the Line of Sight to  $\sigma$  Scorpii Using Copernicus Observations. *M. M. Allen, T. P. Snow, and E. B. Jenkins*. 355, 130, 88-E9 (1990)
- KAPPELER, F. <sup>88</sup>Sr and <sup>89</sup>Y: The s-Process at Magic Neutron Number  $N = 50$ . *F. Käppeler, W. R. Zhao, H. Beer, and U. Ratzel*. 355, 348, 91-B12 (1990)
- KAMEYA, OSAMU. New H<sub>2</sub>O Masers in the NGC 7538 Region. *Osamu Kameya, Koh-Ichiro Morita, Ryohei Kawabe, and Masato Ishiguro*. 355, 562, 95-D7 (1990)
- KARLICKY, M. Beam Heating in Solar Flares: Electrons or Protons? (Abstract of Paper in 1990 June Suppl.). *J. C. Brown, M. Karlicky, A. L. MacKinnon, and G. H. J. van den Oord*. 355, 386, 91-E12 (1990)
- KASUGA, T. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- KATO, MARIKO. Theoretical Light Curve for the Recurrent Nova U Scorpii. *Mariko Kato*. 355, 277, 90-C9 (1990)
- KAUFMANN, P. On Removal of the Gradual Component in Analyses of Solar Impulsive Bursts (Abstract of Paper in 1990 June Suppl.). *J. E. R. Costa, J. C. Brown, E. Correia, and P. Kaufmann*. 355, 377, 91-E3 (1990)
- KAWABE, R. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- KAWABE, RYOHEI. New H<sub>2</sub>O Masers in the NGC 7538 Region. *Osamu Kameya, Koh-Ichiro Morita, Ryohei Kawabe, and Masato Ishiguro*. 355, 562, 95-D7 (1990)
- KAWAI, NOBUYUKI. An Interpretation of X-Ray Spectra of Type II Bursts from the "Rapid Burster": Comptonization Due to Accretion Flow. *Kouichi Hirokuni, Tomoyuki Hanawa, and Nobuyuki Kawai*. 355, 577, 95-F11 (1990)
- KAWASHIMA, S. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- KEEL, W. C. Nuclear Outflow from the Edge-on Galaxy NGC 3628. *G. Fabbiano, T. Heckman, and W. C. Keel*. 355, 442, 93-G11 (1990)
- KEENE, JOCELYN. Detection of a 45 AU Radius Source around L1551-IRS 5: A Possible Accretion Disk. *Jocelyn Keene and Colin R. Masson*. 355, 635, 96-D12 (1990)
- KETO, E. R. Radiative Transfer Modeling of Radio-Frequency Spectral Line Data: Accretion onto G10.6-0.4. *E. R. Keto*. 355, 190, 89-C7 (1990)
- KIM, K.-T. The Halo and Magnetic Field of the Coma Cluster of Galaxies. *K.-T. Kim, P. P. Kronberg, P. E. Dewdney, and T. L. Landecker*. 355, 29, 87-D1 (1990)
- KIM, Y. E. Solar Flare  $\gamma$ -Ray Line Shapes (Abstract of Paper in 1990 June Suppl.). *C. Wernitz, F. L. Lang, and Y. E. Kim*. 355, 386, 91-E12 (1990)
- KLEIN, K.-L. Meter-Decimeter and Microwave Radio Observations of Solar Flares (Abstract of Paper in 1990 June Suppl.). *M. Pick, K.-L. Klein, and G. Trotter*. 355, 376, 91-E2 (1990)
- KOCHAROV, G. E. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- KOCHAROV, L. G. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- KOGUT, A. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Witebsky*. 355, 102, 88-C6 (1990)
- KOVALTISOV, G. A. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- KROEGER, RICHARD. Solar Neutron Decay Proton Observations in Cycle 21 (Abstract of Paper in 1990 June Suppl.). *Paul Evenson, Richard Kroeger, Peter Meyer, and Donald Reames*. 355, 381, 91-E7 (1990)
- KRONBERG, P. P. The Halo and Magnetic Field of the Coma Cluster of Galaxies. *K.-T. Kim, P. P. Kronberg, P. E. Dewdney, and T. L. Landecker*. 355, 29, 87-D1 (1990)
- KRONBERG, PHILIPP P. The "Jet" Rotation Measure Distribution and the Optical Absorption System near the  $z = 1.953$  Quasar 3C 191. *Philipp P. Kronberg, Judith J. Perry, and Edwin L. H. Zukowski*. 355, L31, 98-B1 (1990)

- KUDELA, K. A Search for Solar Neutron Response in Neutron Monitor Data (Abstract of Paper in 1990 June Suppl.). *K. Kudela*. 355, 382, 91-E8 (1990)
- LANDECKER, T. L. The Halo and Magnetic Field of the Coma Cluster of Galaxies. *K.-T. Kim, P. P. Kronberg, P. E. Dewdney, and T. L. Landecker*. 355, 29, 87-D1 (1990)
- LANG, F. L. Solar Flare  $\gamma$ -Ray Line Shapes (Abstract of Paper in 1990 June Suppl.). *C. Wertz, F. L. Lang, and Y. E. Kim*. 355, 386, 91-E12 (1990)
- LATTIMER, JAMES M. Rapidly Rotating Pulsars and the Equation of State. *James M. Lattimer, Madappa Prakash, Dieter Masak, and Amos Yahil*. 355, 241, 89-G10 (1990)
- LEAHY, D. A. The Pulse-Phase Dependence of the Spectrum of GX 301-2. *D. A. Leahy and M. Matsuoka*. 355, 627, 96-D1 (1990)
- LEE, YOUNGUNG. Analysis of  $^{12}\text{CO}$  and  $^{13}\text{CO}$  Emission in a 3 Square Degree Region of the Galactic Plane between  $l = 23^\circ$  and  $25^\circ$ . *Youngung Lee, Ronald L. Snell, and Robert L. Dickman*. 355, 536, 95-B4 (1990)
- LEUNG, KAM-CHING. An Explanation of Light-Curve Asymmetries in Contact Binaries by Means of the Coriolis Effect. *Dao-Qi Zhou and Kam-Ching Leung*. 355, 271, 90-C1 (1990)
- LEVIN, S. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Wütschky*. 355, 102, 88-C6 (1990)
- LIEN, DAVID J. Dust in Comets. I. Thermal Properties of Homogeneous and Heterogeneous Grains. *David J. Lien*. 355, 680, 97-A10 (1990)
- LIFFMAN, KURT. The Effect of Catastrophic Collisional Fragmentation and Diffuse Medium Accretion on a Computational Interstellar Dust System. *Kurt Liffman*. 355, 518, 94-G12 (1990)
- LIKKEL, L. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, 127, 92-C11 (1990)
- LINDBLOM, LEE. The Oscillations of Rapidly Rotating Newtonian Stellar Models. *James R. Ipser and Lee Lindblom*. 355, 226, 89-F7 (1990)
- LINGENFELTER, R. E. Ion and Relativistic Electron Transport in Solar Flares (Abstract of Paper in 1990 June Suppl.). *R. Ramaty, J. A. Miller, X.-M. Hua, and R. E. Lingenfelter*. 355, 377, 91-E3 (1990)
- LISSE, C. M. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, 127, 92-C11 (1990)
- LITES, B. W. High-Resolution Spectra of Solar Magnetic Features. I. Analysis of Penumbra Fine Structure. *B. W. Lites, G. B. Scharmer, and A. Skumanich*. 355, 329, 91-A1 (1990)
- LIVIO, MARIO. Morphologies of Planetary Nebulae Ejected by Close-Binary Nuclei. *Howard E. Bond and Mario Livio*. 355, 568, 95-E1 (1990)
- LOCKWOOD, J. A. Proton Energy Spectra at the Sun in the Solar Cosmic-Ray Events on 1978 May 7 and 1984 February 16. *J. A. Lockwood, H. Debrunner, E. O. Flückiger, and H. Grüdel*. 355, 287, 90-D8 (1990)
- Signature of the Solar Cosmic-Ray Event on 1982 June 3 (Abstract of Paper in 1990 June Suppl.). *H. Debrunner, E. O. Flückiger, and J. A. Lockwood*. 355, 379, 91-E5 (1990)
- LOESER, R. Energy Balance in the Solar Transition Region. I. Hydrostatic Thermal Models with Ambipolar Diffusion. *J. M. Fontenla, E. H. Avrett, and R. Loeser*. 355, 700, 97-C4 (1990)
- LOEWENSTEIN, R. F. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, 127, 92-C11 (1990)
- LOVELACE, R. V. E. Self-collimated Electromagnetic Jets from Magnetized Accretion Disks: The Even-Symmetry Case. *J. C. L. Wang, M. E. Sulkkanen, and R. V. E. Lovelace*. 355, 38, 87-D12 (1990)
- LUTZ, B. L. Monodeuterated Methane in the Outer Solar System. IV. Its Detection and Abundance on Neptune. *C. de Bergh, B. L. Lutz, T. Owen, and J.-P. Maillard*. 355, 661, 96-G1 (1990)
- LYNE, A. G. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- MACGREGOR, KEITH B. Lower Solar Chromosphere-Corona Transition Region. I. Theoretical Models with Small Temperature Gradients. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 295, 90-E4 (1990)
- Lower Solar Chromosphere-Corona Transition Region. III. Implications of the Observed Quiet-Sun Emission Measure Including Wave Pressure Effects. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 309, 90-F6 (1990)
- MACKINNON, A. L. Beam Heating in Solar Flares: Electrons or Protons? (Abstract of Paper in 1990 June Suppl.). *J. C. Brown, M. Karlicky, A. L. MacKinnon, and G. H. J. van den Oord*. 355, 386, 91-E12 (1990)
- MAILLARD, J.-P. Monodeuterated Methane in the Outer Solar System. IV. Its Detection and Abundance on Neptune. *C. de Bergh, B. L. Lutz, T. Owen, and J.-P. Maillard*. 355, 661, 96-G1 (1990)
- MAKGAMATHE, S. Spectra of Relativistic Solar Proton Ground-Level Events Recorded at Sanae, Antarctica (Abstract of Paper in 1990 June Suppl.). *P. H. Stoker and S. Makgamathe*. 355, 380, 91-E6 (1990)
- MANDROU, P. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- MANDZHAVIDZE, N. Z. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Guglenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov*. 355, 378, 91-E4 (1990)
- MARTENS, P. C. H. Neutral Beams in Two-Ribbon Flares and in the Geomagnetic Tail (Abstract of Paper in 1990 June Suppl.). *P. C. H. Martens and A. Young*. 355, 385, 91-E11 (1990)
- MARTIN, R. High-Velocity Evaporation during the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Doderio, and R. Martin*. 355, 374, 91-D14 (1990)
- Velocity-Temperature Distribution in the Evaporating Plasma during the Impulsive Phase of Solar Flares (Abstract of Paper in 1990 June Suppl.). *E. Antonucci, M. A. Doderio, and R. Martin*. 355, 375, 91-E1 (1990)
- MARTIN, ROBERT N. VLA Imaging of Extragalactic Ammonia: Hot Gas in the Nucleus of IC 342. *Paul T. P. Ho, Robert N. Martin, Jean L. Turner, and James M. Jackson*. 355, 119, 92-C1 (1990)
- MARTÍNEZ-GONZÁLEZ, E. Anisotropies in the Microwave Sky Due to Nonlinear Structures. *E. Martínez-González, J. L. Sanz, and J. Silk*. 355, 15, 92-B1 (1990)
- MARZIANI, PAOLO. Implications of Arp 102B: Line Emission from an Accretion Disk? *Jack W. Sulentic, Massimo Calvani, Paolo Marziani, and Wei Zheng*. 355, 115, 92-B11 (1990)
- MASAK, DIETER. Rapidly Rotating Pulsars and the Equation of State. *James M. Lattimer, Madappa Prakash, Dieter Masak, and Amos Yahil*. 355, 241, 89-G10 (1990)
- MASNOU, J. L. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- MASSA, DERCK. Ultraviolet Interstellar Absorption toward HD 163522, a Halo Star at 9 Kiloparsecs in the Direction  $l = 350^\circ$  and  $b = -9^\circ$ . *Blair D. Savage, Derck Massa, and Kenneth Sembach*. 355, 114, 88-D5 (1990)
- MASSARO, E. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)

- MASSON, COLIN R. Detection of a 45 AU Radius Source around L1551-IRS 5: A Possible Accretion Disk. *Jocelyn Keene and Colin R. Masson*. 355, 635, 96-D12 (1990)
- MATSUOKA, M. The Pulse-Phase Dependence of the Spectrum of GX 301-2. *D. A. Leahy and M. Matsuoka*. 355, 627, 96-D1 (1990)
- MATT, G. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- MCDONALD, F. B. Solar Energetic Particle Observations of the 1982 June 3 and 1980 June 21 Gamma-Ray/Neutron Events (Abstract of Paper in 1990 June Suppl.). *M. A. I. Van Hollebeke, F. B. McDonald, and J. P. Meyer*. 355, 382, 91-E8 (1990)
- MEYER, J. P. Solar Energetic Particle Observations of the 1982 June 3 and 1980 June 21 Gamma-Ray/Neutron Events (Abstract of Paper in 1990 June Suppl.). *M. A. I. Van Hollebeke, F. B. McDonald, and J. P. Meyer*. 355, 382, 91-E8 (1990)
- MEYER, PETER. Solar Neutron Decay Proton Observations in Cycle 21 (Abstract of Paper in 1990 June Suppl.). *Paul Evenson, Richard Kroeger, Peter Meyer, and Donald Reames*. 355, 381, 91-E7 (1990)
- A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- MEYER, STEPHAN S. A Large-Scale Cosmic Microwave Background Anisotropy Measurement at Millimeter and Submillimeter Wavelengths. *Lyman A. Page, Edward S. Cheng, and Stephan S. Meyer*. 355, L1, 92-A7 (1990)
- MILLER, J. A. Ion and Relativistic Electron Transport in Solar Flares (Abstract of Paper in 1990 June Suppl.). *R. Ramaty, J. A. Miller, X.-M. Hua, and R. E. Lingenfelter*. 355, 377, 91-E3 (1990)
- MILLER, J. S. Spectropolarimetry of High-Polarization Seyfert 2 Galaxies and Unified Seyfert Theories. *J. S. Miller and R. W. Goodrich*. 355, 456, 94-B1 (1990)
- MINO, T. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- MINESHIGE, SHIN. Magnetic Model for Asymmetric Supernova Remnants. *Shin Mineshige and Kazunari Shibata*. 355, L47, 98-C8 (1990)
- MOLARO, P. Mg II Observed in the Local Interstellar Medium: The Local Cloud. *R. Génova, P. Molaro, G. Vladilo, and J. E. Beckman*. 355, 150, 88-G2 (1990)
- MORELLI, E. Observations of Galactic and Extragalactic High-Energy X-Ray Sources. *G. Matt, E. Costa, D. Dal Fiume, W. Dusi, F. Frontera, and E. Morelli*. 355, 468, 94-C1 (1990)
- MORITA, K.-I. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- MORITA, KOH-ICHIRO. New H<sub>2</sub>O Masers in the NGC 7538 Region. *Osamu Kameya, Koh-Ichiro Morita, Ryohei Kawabe, and Masato Ishiguro*. 355, 562, 95-D7 (1990)
- MOSLEY, S. H. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, L27, 92-C11 (1990)
- MOSES, DAN. A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- MOSKALIK, PAWEŁ. Resonances and Period Doubling in the Pulsations of Stellar Models. *Paweł Moskalik and J. Robert Buchler*. 355, 590, 95-G12 (1990)
- MUNDY, LEE G. An NH<sub>3</sub> Ring around the Infrared Sources in NGC 2071. *Shudong Zhou, Neal J. Evans II, and Lee G. Mundy*. 355, 159, 88-G12 (1990)
- NAKAJIMA, H. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- NAKANO, TAKENORI. The Density Distribution in the Beta Pictoris Dust Disk. *Takenori Nakano*. 355, L43, 98-C3 (1990)
- NEWPORT, BRIAN J. A 153 Day Periodicity in the Occurrence of Solar Flares Producing Energetic Interplanetary Electrons (Abstract of Paper in 1990 June Suppl.). *Wolfgang Dröge, Kenneth Gibbs, John M. Grunsfeld, Peter Meyer, Brian J. Newport, Paul Evenson, and Dan Moses*. 355, 381, 91-E7 (1990)
- NIEL, M. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- NOCI, G. The Effect of Nonequilibrium Ionization on Ultraviolet Line Shifts in the Solar Transition Region. *D. Spadaro, G. Noci, R. A. Zappala, and S. K. Antiochos*. 355, 342, 91-B5 (1990)
- NOVAK, G. Polarization of the  $\lambda = 1.3$  Millimeter Continuum Radiation from the Kleinmann-Low Nebula. *G. Novak, C. R. Predmore, and P. F. Goldsmith*. 355, 166, 89-A7 (1990)
- OHSAWA, YUKIHARU. Prompt Ion Acceleration to Relativistic Energies by a Large-Amplitude Magnetosonic Wave (Abstract of Paper in 1990 June Suppl.). *Yukiharu Ohsawa*. 355, 384, 91-E10 (1990)
- OKUMURA, S. K. Nuclear Concentration of Molecular Gas in the Late-Type Spiral Galaxy NGC 6946: 300 Parsec Scale Gaseous Disk. *S. Ishizuki, R. Kawabe, M. Ishiguro, S. K. Okumura, K.-I. Morita, Y. Chikada, T. Kasuga, and M. Doi*. 355, 436, 93-G3 (1990)
- OMONT, A. Observations of 40-70 Micron Bands of Ice in IRAS 09371+1212 and Other Stars. *A. Omont, S. H. Moseley, T. Forveille, W. J. Glaccum, P. M. Harvey, L. Likkell, R. F. Loewenstein, and C. M. Lisse*. 355, L27, 92-C11 (1990)
- OWEN, T. Monodeuterated Methane in the Outer Solar System. IV. Its Detection and Abundance on Neptune. *C. de Bergh, B. L. Lutz, T. Owen, and J.-P. Maillard*. 355, 661, 96-G1 (1990)
- PAGE, LYMAN A. A Large-Scale Cosmic Microwave Background Anisotropy Measurement at Millimeter and Submillimeter Wavelengths. *Lyman A. Page, Edward S. Cheng, and Stephan S. Meyer*. 355, L1, 92-A7 (1990)
- PARLIER, B. Observation of the Crab Pulsar, PSR 0531+21, at 0.2-6.0 MeV with the FIGARO II Experiment. *B. Agrinier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- PERRY, JUDITH J. The "Jet" Rotation Measure Distribution and the Optical Absorption System near the  $z = 1.953$  Quasar 3C 191. *Philipp P. Kronberg, Judith J. Perry, and Edwin L. H. Zukowski*. 355, L31, 98-B1 (1990)
- PERSIC, MASSIMO. Dark Matter in Spiral Galaxies. *Massimo Persic and Paolo Salucci*. 355, 44, 87-E5 (1990)
- PICK, M. Meter-Decimeter and Microwave Radio Observations of Solar Flares (Abstract of Paper in 1990 June Suppl.). *M. Pick, K.-L. Klein, and G. Trotter*. 355, 376, 91-E2 (1990)
- PILACHOWSKI, CATHERINE. On Lithium Removal from G Dwarfs: Erratum. *L. M. Hobbs, Icko Iben, Jr., and Catherine Pilachowski*. 355, 745, 97-G5 (1990) (Orig. paper in 347, 817, 193-E1 (1989))
- PRAKASH, MADAPPA. Rapidly Rotating Pulsars and the Equation of State. *James M. Lattimer, Madappa Prakash, Dieter Masak, and Amos Yahil*. 355, 241, 89-G10 (1990)
- PREDMORE, C. R. Polarization of the  $\lambda = 1.3$  Millimeter Continuum Radiation from the Kleinmann-Low Nebula. *G. Novak, C. R. Predmore, and P. F. Goldsmith*. 355, 166, 89-A7 (1990)
- PRIALNIK, DINA. Heating and Melting of Small Icy Satellites by the Decay of <sup>26</sup>Al. *Dina Prialnik and Akiva Bar-Nun*. 355, 281, 90-D1 (1990)
- PRITCHET, C. J. A Globular Cluster System Surrounding the cD Galaxy NGC 6166. *C. J. Pritchett and William E. Harris*. 355, 410, 93-E1



- (1990)  
A Search for Primeval Galaxies at  $z = 1.9$ . *C. J. Pritchet and F. D. A. Hartwick*. 355, L11, 92-B7 (1990)
- PRITCHET, CHRISTOPHER J. Late-Type Stars in an Inner and Far Disk Field of M31. *Harvey B. Richer, Dennis R. Crabtree, and Christopher J. Pritchet*. 355, 448, 94-A5 (1990)
- QUINN, THOMAS. Planetary Perturbations and the Origin of Short-Period Comets. *Thomas Quinn, Scott Tremaine, and Martin Duncan*. 355, 667, 96-G9 (1990)
- RAMATY, R. Ion and Relativistic Electron Transport in Solar Flares (Abstract of Paper in 1990 June Suppl.). *R. Ramaty, J. A. Miller, X.-M. Hua, and R. E. Lingenfelter*. 355, 377, 91-E3 (1990)
- RATZEL, U.  $^{88}\text{Sr}$  and  $^{89}\text{Y}$ : The  $s$ -Process at Magic Neutron Number  $N = 50$ . *F. Käppeler, W. R. Zhao, H. Beer, and U. Ratzel*. 355, 348, 91-B12 (1990)
- REAMES, D. V. The Relationship between Energetic Particles and Flare Properties for Impulsive Solar Flares (Abstract of Paper in 1990 June Suppl.). *H. V. Cane and D. V. Reames*. 355, 379, 91-E5 (1990)
- REAMES, DONALD. Solar Neutron Decay Proton Observations in Cycle 21 (Abstract of Paper in 1990 June Suppl.). *Paul Evenson, Richard Kroeger, Peter Meyer, and Donald Reames*. 355, 381, 91-E7 (1990)
- REAMES, DONALD V. Energetic Particles from Impulsive Solar Flares (Abstract of Paper in 1990 June Suppl.). *Donald V. Reames*. 355, 379, 91-E5 (1990)
- REEVES, HUBERT. On the Origin of Lithium. *Hubert Reeves, Jacques Richer, Katsuhiko Sato, and Nobuo Terasawa*. 355, 18, 87-C3 (1990)
- REMILLARD, R. A. LB 1800: A Bright Eclipsing Cataclysmic Variable and a Transient X-Ray Source. *D. A. H. Buckley, D. J. Sullivan, R. A. Remillard, I. R. Tuohy, and M. Clark*. 355, 617, 96-C1 (1990)
- RICHER, HARVEY B. Late-Type Stars in an Inner and Far Disk Field of M31. *Harvey B. Richer, Dennis R. Crabtree, and Christopher J. Pritchet*. 355, 448, 94-A5 (1990)
- RICHER, JACQUES. On the Origin of Lithium. *Hubert Reeves, Jacques Richer, Katsuhiko Sato, and Nobuo Terasawa*. 355, 18, 87-C3 (1990)
- RIEGER, E. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- ROSEN, NATHAN. Stability of a Collapsed Star in Bimetric General Relativity. *Amos Harpaz and Nathan Rosen*. 355, 210, 89-E1 (1990)
- ROULEAU, FRANÇOIS. Collapse and Fragmentation of Isothermal and Polytopic Cylindrical Clouds. *François Rouleau and Pierre Bastien*. 355, 172, 89-B1 (1990)
- ROVIRA, M. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet*. 355, 383, 91-E9 (1990)
- RÓZYCKA, MICHAŁ. The Formation Phase of the Solar Nebula. *Peter Bodenheimer, Harold W. Yorke, Michał Różycka, and Joel E. Tohline*. 355, 651, 96-F4 (1990)
- RUDNICK, LAWRENCE. Flow Patterns in Radio Hot Spots: A Study of 3C 33 North. *Lawrence Rudnick and Mariha Anderson*. 355, 427, 93-F7 (1990)
- RUSSELL, R. S. Non-LTE Model Calculations for SN 1987A and the Extragalactic Distance Scale. *W. Schmutz, D. C. Abbott, R. S. Russell, W.-R. Hamann, and U. Wessolowski*. 355, 255, 90-A12 (1990)
- SACCO, B. Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Aginier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- SAHAL-BRÉCHOT, S. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet*. 355, 383, 91-E9 (1990)
- SAITO, S. Interstellar Cyanomethane. *B. E. Turner, P. Friberg, W. M. Irvine, S. Saito, and S. Yamamoto*. 355, 546, 95-C4 (1990)
- SAKAI, JUN-ICHI. Prompt Particle Acceleration and Plasma Jet Formation during Current Loop Coalescence in Solar Flares (Abstract of Paper in 1990 June Suppl.). *Jun-ichi Sakai*. 355, 385, 91-E11 (1990)
- SALUCCI, PAOLO. Dark Matter in Spiral Galaxies. *Massimo Persic and Paolo Salucci*. 355, 44, 87-E5 (1990)
- SALVATI, M. Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Aginier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- SANDFORD, S. A. The Physical and Infrared Spectral Properties of CO<sub>2</sub> in Astrophysical Ice Analogs. *S. A. Sandford and L. J. Allamandola*. 355, 357, 91-C9 (1990)
- SANZ, J. L. Anisotropies in the Microwave Sky Due to Nonlinear Structures. *E. Martínez-González, J. L. Sanz, and J. Silk*. 355, L5, 92-B1 (1990)
- SATO, KATSUHIKO. On the Origin of Lithium. *Hubert Reeves, Jacques Richer, Katsuhiko Sato, and Nobuo Terasawa*. 355, 18, 87-C3 (1990)
- SAVAGE, BLAIR D. Ultraviolet Interstellar Absorption toward HD 163522, a Halo Star at 9 Kiloparsecs in the Direction  $l = 350^\circ$  and  $b = -9^\circ$ . *Blair D. Savage, Derck Massa, and Kenneth Sembach*. 355, 114, 88-D5 (1990)
- SCARSI, L. Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Aginier, J. L. Masnou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne*. 355, 645, 96-E10 (1990)
- SCHAEFER, BRADLEY E. Orbital Periods of Recurrent Novae. *Bradley E. Schaefer*. 355, L39, 98-B11 (1990)
- SCHARMER, G. B. High-Resolution Spectra of Solar Magnetic Features. I. Analysis of Penumbral Fine Structure. *B. W. Lites, G. B. Schamer, and A. Skumanich*. 355, 329, 91-A1 (1990)
- SCHMIDT, MAARTEN. Apparent Spatial Uniformity of the Gamma-Ray Bursts Detected by the Konus Experiment on Venera 11 and Venera 12. *J. C. Higdon and Maarten Schmidt*. 355, 13, 87-B11 (1990)
- SCHMIDTKE, PAUL C. The Low-Mass X-Ray Binary LMC X-2. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, and I. B. Thompson*. 355, 496, 94-F1 (1990)
- SCHMUTZ, W. Non-LTE Model Calculations for SN 1987A and the Extragalactic Distance Scale. *W. Schmutz, D. C. Abbott, R. S. Russell, W.-R. Hamann, and U. Wessolowski*. 355, 255, 90-A12 (1990)
- SEMBACH, KENNETH. Ultraviolet Interstellar Absorption toward HD 163522, a Halo Star at 9 Kiloparsecs in the Direction  $l = 350^\circ$  and  $b = -9^\circ$ . *Blair D. Savage, Derck Massa, and Kenneth Sembach*. 355, 114, 88-D5 (1990)
- SHEA, M. A. Were Solar Neutrons Observed by Neutron Monitors on 1984 April 25? (Abstract of Paper in 1990 June Suppl.). *D. F. Smart, M. A. Shea, E. O. Flückiger, H. Debrunner, and J. E. Humble*. 355, 380, 91-E6 (1990)
- SHEELEY, N. R., JR. Solar Wind Speed and Coronal Flux-Tube Expansion. *Y.-M. Wang and N. R. Sheeley, Jr.*. 355, 726, 97-E10 (1990)
- SHIBATA, KAZUNARI. Magnetic Model for Asymmetric Supernova Remnants. *Shin Mineshige and Kazunari Shibata*. 355, L47, 98-C8 (1990)
- SHINOHARA, N. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- SHIOMI, Y. A High-Speed Shock Wave in the Impulsive Phase of the 1984 April 24 Flare (Abstract of Paper in 1990 June Suppl.). *H. Nakajima, S. Kawashima, N. Shinohara, Y. Shiomi, S. Enome, and E. Rieger*. 355, 376, 91-E2 (1990)
- SILK, J. Anisotropies in the Microwave Sky Due to Nonlinear Structures. *E. Martínez-González, J. L. Sanz, and J. Silk*. 355, L5, 92-B1 (1990)
- SKUMANICH, A. High-Resolution Spectra of Solar Magnetic Features. I. Analysis of Penumbral Fine Structure. *B. W. Lites, G. B. Schamer, and A. Skumanich*. 355, 329, 91-A1 (1990)
- SMART, D. F. Were Solar Neutrons Observed by Neutron Monitors on 1984 April 25? (Abstract of Paper in 1990 June Suppl.). *D. F.*

- Smart, M. A. Shea, E. O. Flückiger, H. Debrunner, and J. E. Humble. 355, 380, 91-E6 (1990)
- SMITH, ANDREW M. Vacuum Ultraviolet Images of the Large Magellanic Cloud: Erratum. *Andrew M. Smith, Robert H. Cornett, and Robert S. Hill.* 355, 746, 97-G6 (1990) (Orig. paper in 320, 609, 116-C9 (1987))
- SMITH, D. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet.* 355, 383, 91-E9 (1990)
- SMITH, J. B., JR. Nonpotential Magnetic Fields at Sites of Gamma-Ray Flares (Abstract of Paper in 1990 June Suppl.). *M. J. Hagyard, P. Venkatakrishnan, and J. B. Smith, Jr.* 355, 376, 91-E2 (1990)
- SMOOT, G. F. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Witebsky.* 355, 102, 88-C6 (1990)
- SNELL, RONALD L. Analysis of  $^{12}\text{CO}$  and  $^{13}\text{CO}$  Emission in a 3 Square Degree Region of the Galactic Plane between  $l = 23^\circ$  and  $25^\circ$ . *Youngung Lee, Ronald L. Snell, and Robert L. Dickman.* 355, 536, 95-B4 (1990)
- SNOW, T. P. Interstellar Absorption along the Line of Sight to  $\sigma$  Scorpii Using Copernicus Observations. *M. M. Allen, T. P. Snow, and E. B. Jenkins.* 355, 130, 88-E9 (1990)
- SPADARO, D. The Effect of Nonequilibrium Ionization on Ultraviolet Line Shifts in the Solar Transition Region. *D. Spadaro, G. Noci, R. A. Zappala, and S. K. Antiochos.* 355, 342, 91-B5 (1990)
- STANFORD, S. A. The Kinematics and Morphology of NGC 520. *S. A. Stanford and M. Balcells.* 355, 59, 87-F10 (1990)
- STOKER, P. H. Spectra of Relativistic Solar Proton Ground-Level Events Recorded at Sanae, Antarctica (Abstract of Paper in 1990 June Suppl.). *P. H. Stoker and S. Makgathhe.* 355, 380, 91-E6 (1990)
- SULINTIC, JACK W. Implications of Arp 102B: Line Emission from an Accretion Disk? *Jack W. Sulentic, Massimo Calvani, Paolo Marziani, and Wei Zheng.* 355, L15, 92-B11 (1990)
- SULKANEN, M. E. Self-collimated Electromagnetic Jets from Magnetized Accretion Disks: The Even-Symmetry Case. *J. C. L. Wang, M. E. Sulkane, and R. V. E. Lovelace.* 355, 38, 87-D12 (1990)
- SULLIVAN, D. J. LB 1800: A Bright Eclipsing Cataclysmic Variable and a Transient X-Ray Source. *D. A. H. Buckley, D. J. Sullivan, R. A. Remillard, I. R. Tuohy, and M. Clark.* 355, 617, 96-C1 (1990)
- TAMRES, D. Impact Line Linear Polarization as a Diagnostic of 100 keV Proton Acceleration in Solar Flares (Abstract of Paper in 1990 June Suppl.). *J. C. Hénoux, G. Chambe, D. Smith, D. Tamres, N. Feautrier, M. Rovira, and S. Sahal-Bréchet.* 355, 383, 91-E9 (1990)
- TANG, FRANCES. Optical Properties of Impulsive Flares (Abstract of Paper in 1990 June Suppl.). *Harold Zirin and Frances Tang.* 355, 373, 91-D13 (1990)
- TERASAWA, NOBUO. On the Origin of Lithium. *Hubert Reeves, Jacques Richer, Katsuhiko Sato, and Nobuo Terasawa.* 355, 18, 87-C3 (1990)
- TEREKHOV, M. M. Neutrons and Gamma-Ray Emission on 1982 June 3: The Possibility of Fitting the Data on the Assumption of One Population of Accelerated Particles (Abstract of Paper in 1990 June Suppl.). *V. G. Gugenko, Yu. E. Efimov, G. E. Kocharov, G. A. Kovaltsov, N. Z. Mandzhavidze, M. M. Terekhov, and L. G. Kocharov.* 355, 378, 91-E4 (1990)
- THOMPSON, I. B. The Low-Mass X-Ray Binary LMC X-2. *David Crampton, A. P. Cowley, J. B. Hutchings, Paul C. Schmidtke, and I. B. Thompson.* 355, 496, 94-F1 (1990)
- THRONSON, HARLEY A., JR. Submillimeter Continuum Emission from Galaxies: Star Formation and the Interstellar Medium in the Local Group Dwarf IC 10. *Harley A. Thronson, Jr., Deirdre A. Hunter, Sean Casey, and D. A. Harper.* 355, 94, 88-B9 (1990)
- TOHLIN, JOEL E. The Formation Phase of the Solar Nebula. *Peter Bodenheimer, Harold W. Yorke, Michał Różycka, and Joel E. Tohline.* 355, 651, 96-F4 (1990)
- TOMITA, KENJI. Cosmological Observations in an Inhomogeneous Universe. *Kazuya Watanabe and Kenji Tomita.* 355, 1, 87-A12 (1990)
- TREMAINE, SCOTT. Planetary Perturbations and the Origin of Short-Period Comets. *Thomas Quinn, Scott Tremaine, and Martin Duncan.* 355, 667, 96-G9 (1990)
- TROTTER, G. Meter-Decimeter and Microwave Radio Observations of Solar Flares (Abstract of Paper in 1990 June Suppl.). *M. Pick, K.-L. Klein, and G. Trotter.* 355, 376, 91-E2 (1990)
- TULLY, R. BRENT. Imaging Spectrophotometry of Ionized Gas in NGC 1068. I. Kinematics of the Narrow-Line Region. *Gerald Cecil, Jonathan Bland, and R. Brent Tully.* 355, 70, 87-G10 (1990)
- TUOHY, I. R. LB 1800: A Bright Eclipsing Cataclysmic Variable and a Transient X-Ray Source. *D. A. H. Buckley, D. J. Sullivan, R. A. Remillard, I. R. Tuohy, and M. Clark.* 355, 617, 96-C1 (1990)
- TURNER, B. E. Interstellar Cyanomethane. *B. E. Turner, P. Friberg, W. M. Irvine, S. Saito, and S. Yamamoto.* 355, 546, 95-C4 (1990)
- TURNER, JEAN L. VLA Imaging of Extragalactic Ammonia: Hot Gas in the Nucleus of IC 342. *Paul T. P. Ho, Robert N. Martin, Jean L. Turner, and James M. Jackson.* 355, L19, 92-C1 (1990)
- ULMER, M. P. Search for Cold Gas in Clusters with and without Cooling Flows. *D. A. Grabelsky and M. P. Ulmer.* 355, 401, 93-D4 (1990)
- VAN DEN OORD, G. H. J. Beam Heating in Solar Flares: Electrons or Protons? (Abstract of Paper in 1990 June Suppl.). *J. C. Brown, M. Karlicky, A. L. MacKinnon, and G. H. J. van den Oord.* 355, 386, 91-E12 (1990)
- VAN HOLLEBEKE, M. A. I. Solar Energetic Particle Observations of the 1982 June 3 and 1980 June 21 Gamma-Ray/Neutron Events (Abstract of Paper in 1990 June Suppl.). *M. A. I. Van Hollebeke, F. B. McDonald, and J. P. Meyer.* 355, 382, 91-E8 (1990)
- VEDRENNE, G. Observation of the Crab Pulsar, PSR 0531+21, at 0.2–6.0 MeV with the FIGARO II Experiment. *B. Agnirier, J. L. Massou, B. Parlier, M. Niel, P. Mandrou, G. Vedrenne, G. Gerardi, T. Mineo, B. Sacco, L. Scarsi, E. Costa, E. Massaro, G. Matt, M. Salvati, and A. G. Lyne.* 355, 645, 96-E10 (1990)
- VENKATAKRISHNAN, P. Nonpotential Magnetic Fields at Sites of Gamma-Ray Flares (Abstract of Paper in 1990 June Suppl.). *M. J. Hagyard, P. Venkatakrishnan, and J. B. Smith, Jr.* 355, 376, 91-E2 (1990)
- VLADILLO, G. Mg II Observed in the Local Interstellar Medium: The Local Cloud. *R. Génova, P. Molano, G. Vladilo, and J. E. Beckman.* 355, 150, 88-G2 (1990)
- WANG, HAIMIN. Microwave Structure of the Quiet Sun at 8.5 GHz. *Dale E. Gary, Harold Zirin, and Haimin Wang.* 355, 321, 90-G6 (1990)
- WANG, J. C. L. Self-collimated Electromagnetic Jets from Magnetized Accretion Disks: The Even-Symmetry Case. *J. C. L. Wang, M. E. Sulkane, and R. V. E. Lovelace.* 355, 38, 87-D12 (1990)
- WANG, Y.-M. Solar Wind Speed and Coronal Flux-Tube Expansion. *Y.-M. Wang and N. R. Sheeley, Jr.* 355, 726, 97-E10 (1990)
- WATANABE, KAZUYA. Cosmological Observations in an Inhomogeneous Universe. *Kazuya Watanabe and Kenji Tomita.* 355, 1, 87-A12 (1990)
- WAYTE, S. R. Structure of the Interstellar Medium in the Magellanic Clouds. *S. R. Wayte.* 355, 473, 94-C7 (1990)
- WERNITZ, C. Solar Flare  $\gamma$ -Ray Line Shapes (Abstract of Paper in 1990 June Suppl.). *C. Wernitz, F. L. Lang, and Y. E. Kim.* 355, 386, 91-E12 (1990)
- WESSOLOWSKI, U. Non-LTE Model Calculations for SN 1987A and the Extragalactic Distance Scale. *W. Schmutz, D. C. Abbott, R. S. Russell, W.-R. Hamann, and U. Wessolowski.* 355, 255, 90-A12 (1990)
- WHEELER, J. CRAIG. The Convective Urca Mechanism. *Zalman Barkat and J. Craig Wheeler.* 355, 602, 96-A12 (1990)
- WILLICK, JEFFREY A. A Redshift Survey toward a Proposed Void of Galaxies Suggested by the Distribution of Abell Clusters. *Jeffrey A. Willick, Jean P. Brodie, and Stuart Bowyer.* 355, 393, 93-C8 (1990)
- WITEBSKY, C. A Measurement of the Temperature of the Cosmic Microwave Background at a Frequency of 7.5 GHz. *A. Kogut, M. Bensadoun, G. De Amici, S. Levin, G. F. Smoot, and C. Witebsky.* 355, 102, 88-C6 (1990)



- WITT, ADOLF N. Spectroscopy of Extended Red Emission in Reflection Nebulae. *Adolf N. Witt and Todd A. Boroson*. 355, 182, 89-B12 (1990)
- WOLFF, MICHAEL T. On the Stability Properties of White Dwarf Radiative Shocks: Settling Solutions. *James N. Imamura and Michael T. Wolff*. 355, 216, 89-E9 (1990)
- WOODS, D. TOD. Lower Solar Chromosphere-Corona Transition Region. I. Theoretical Models with Small Temperature Gradients. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 295, 90-E4 (1990)
- Lower Solar Chromosphere-Corona Transition Region. III. Implications of the Observed Quiet-Sun Emission Measure Including Wave Pressure Effects. *D. Tod Woods, Thomas E. Holzer, and Keith B. MacGregor*. 355, 309, 90-F6 (1990)
- YAHIL, AMOS. Rapidly Rotating Pulsars and the Equation of State. *James M. Lattimer, Madappa Prakash, Dieter Masak, and Amos Yahil*. 355, 241, 89-G10 (1990)
- YAMAMOTO, S. Interstellar Cyanomethane. *B. E. Turner, P. Friberg, W. M. Irvine, S. Saito, and S. Yamamoto*. 355, 546, 95-C4 (1990)
- YORKE, HAROLD W. The Formation Phase of the Solar Nebula. *Peter Bodenheimer, Harold W. Yorke, Michal Różycka, and Joel E. Tohline*. 355, 651, 96-F4 (1990)
- YOSHIMORI, M. Observations of Solar Flare Gamma-Ray Spectra with the *Hinotori* Satellite (Abstract of Paper in 1990 June Suppl.). *M. Yoshimori*. 355, 379, 91-E5 (1990)
- YOUNG, A. Neutral Beams in Two-Ribbon Flares and in the Geomagnetic Tail (Abstract of Paper in 1990 June Suppl.). *P. C. H. Martens and A. Young*. 355, 385, 91-E11 (1990)
- ZAPPALA, R. A. The Effect of Nonequilibrium Ionization on Ultraviolet Line Shifts in the Solar Transition Region. *D. Spadaro, G. Noci, R. A. Zappala, and S. K. Antiochos*. 355, 342, 91-B5 (1990)
- ZHAN, YIN. The Mass Function of Galaxy Clusters. *Yin Zhan*. 355, 387, 93-C1 (1990)
- ZHAO, W. R.  $^{88}\text{Sr}$  and  $^{89}\text{Y}$ : The *s*-Process at Magic Neutron Number  $N = 50$ . *F. Käppeler, W. R. Zhao, H. Beer, and U. Ratzel*. 355, 348, 91-B12 (1990)
- ZHENG, WEI. Implications of Arp 102B: Line Emission from an Accretion Disk? *Jack W. Sulentic, Massimo Calvani, Paolo Marziani, and Wei Zheng*. 355, L15, 92-B11 (1990)
- ZHOU, DAO-QI. An Explanation of Light-Curve Asymmetries in Contact Binaries by Means of the Coriolis Effect. *Dao-Qi Zhou and Kam-Ching Leung*. 355, 271, 90-C1 (1990)
- ZHOU, SHUDONG. An  $\text{NH}_3$  Ring around the Infrared Sources in NGC 2071. *Shudong Zhou, Neal J. Evans II, and Lee G. Mundy*. 355, 159, 88-G12 (1990)
- ZIRIN, HAROLD. Microwave Structure of the Quiet Sun at 8.5 GHz. *Dale E. Gary, Harold Zirin, and Haimin Wang*. 355, 321, 90-G6 (1990)
- Optical Properties of Impulsive Flares (Abstract of Paper in 1990 June Suppl.). *Harold Zirin and Frances Tang*. 355, 373, 91-D13 (1990)
- ZUKOWSKI, EDWIN L. H. The "Jet" Rotation Measure Distribution and the Optical Absorption System near the  $z = 1.953$  Quasar 3C 191. *Philipp P. Kronberg, Judith J. Perry, and Edwin L. H. Zukowski*. 355, L31, 98-B1 (1990)